1. 5,935,522, Aug. 10, 1999, On-line **DNA** analysis system with **rapid** thermal cycling; Harold P. Swerdlow, et al., 422/70; 73/61.55, 61.56; 204/601, 604; 210/142, 198.2, 656; 422/68.1, 81, 82.08; 435/4, 6, 286.1, 287.2; 436/43, 53, 161, 172, 174, 177, 178, 807 [IMAGE AVAILABLE]

US PAT NO: 5,935,522 [IMAGE AVAILABLE] L10: 1 of 85

ABSTRACT:
An apparatus particularly suited for subjecting biological samples to any necessary sample preparation tasks, subjecting the sample to **rapid** thermal cycling, and then subjecting the sample to subsequent on-line analysis using one or more of a number of analytical techniques. The apparatus includes a chromatography device including an injection means, a chromatography pump, and a chromatography column. In addition, the apparatus also contains a **capillary** electrophoresis device consisting of a **capillary** electrophoresis column with an inlet and outlet end, a means of injection, and means of applying a high voltage to cause the differential migration of species of interest through the **capillary** column. Effluent from the liquid chromatography column passes over the inlet end of the **capillary** electrophoresis column through a tee structure and when the loading of the **capillary** electrophoresis column is desired, a voltage supply is activated at a precise voltage and polarity over a specific duration to cause sample species to be diverted from the flowing stream to the **capillary** electrophoresis column. A laser induced fluorescence detector preferably is used to analyze the products separated while in the electrophoresis column.

2. 5,932,475, Aug. 3, 1999, Human nucleolin-like protein; Olga Bandman, et al., 435/320.1, 6, 69.1; 530/350; 536/23.1, 23.5 [IMAGE AVAILABLE]

US PAT NO: 5,932,475 [IMAGE AVAILABLE] L10: 2 of 85

ABSTRACT:
The invention provides a human nucleolin-like protein (HNLP) and polynucleotides which identify and encode HNLP. The invention also provides expression vectors, host cells, antibodies, agonists, and antagonists. The invention also provides methods for treating or preventing disorders associated with expression of HNLP.

3. 5,932,443, Aug. 3, 1999, Human antigens; Preeti Lal, et al., 435/69.1, 6, 91.2, 252.3, 320.1; 514/44; 536/23.5 [IMAGE AVAILABLE]

US PAT NO: 5,932,443 [IMAGE AVAILABLE] L10: 3 of 85

ABSTRACT:

The invention provides two human antigens (ANTS) and polynucleotides which identify and encode ANTS. The invention also provides expression vectors, host cells, agonists, antibodies and antagonists. The invention also provides methods for treating disorders associated with expression of ANTS.

4. 5,932,423, Aug. 3, 1999, Cyclic nucleotide phosphodiesterases, Janice Au-Young, et al., 435/6, 69.1, 320.1, 325, 348; 536/23.2, 23.5 [IMAGE AVAILABLE]

US PAT NO: 5,932,423 [IMAGE AVAILABLE] L10: 4 of 85

ABSTRACT:
The invention provides human cyclic nucleotide phosphodiesterases (PDE8) and polynucleotides which identify and encode PDE8. The invention also provides expression vectors, host cells, antibodies, agonists, and antagonists. The invention also provides methods for treating or preventing disorders associated with expression of PDE8.

5. 5,932,420, Aug. 3, 1999, Polynucleotides encoding a human integral membrane protein; Olga Bandman, et al., 435/6, 7.1, 69.1, 252.3, 320.1; 536/23.5 [IMAGE AVAILABLE]

US PAT NO: 5,932,420 [IMAGE AVAILABLE] L10: 5 of 85

ABSTRACT
The invention provides a new human integral membrane protein (NIMPH) and polynucleotides which identify and encode NIMPH. The invention also provides expression vectors, host cells, agonists, antibodies and antagonists. The invention also provides methods for treating disorders associated with expression of NIMPH.

6. 5,929,033, Jul. 27, 1999, Extracellular mucous matrix glycoprotein; Y. Tom Tang, et al., 514/12; 435/6, 69.1, 252.3, 320.1; 514/44; 530/350; 536/23.2 [IMAGE AVAILABLE]

US PAT NO: 5,929,033 [IMAGE AVAILABLE] L10: 6 of 85

ABSTRACT
The invention provides a human extracellular mucous matrix glycoprotein (EMMG) and polynucleotides which identify and encode EMMG. The invention also provides expression vectors, host cells, antibodies, agonists, and antagonists. The invention also provides methods for treating or preventing disorders associated with expression of EMMG.

7. 5,928,923, Jul. 27, 1999, Human short-chain dehydrogenase; Preeti Lal, et al., 435/189, 6, 91.2, 252.33, 320.1; 514/44; 530/350 [IMAGE AVAILABLE]

US PAT NO: 5,928,923 [IMAGE AVAILABLE] L10: 7 of 85

ABSTRACT:
The invention provides a human short-chain dehydrogenase (HSCD) and polynucleotides which identify and encode HSCD. The invention also provides expression vectors, host cells, antibodies, agonists, and antagonists. The invention also provides methods for treating or preventing disorders associated with expression of HSCD.

8. 5,928,906, Jul. 27, 1999, Process for direct sequencing during template **amplification**; Hubert Koster, et al., 435/91.2; 250/281, 282; 435/6, 91.1, 395; 536/24.3, 25.3 [IMAGE AVAILABLE]

US PAT NO: 5,928,906 [IMAGE AVAILABLE] L10: 8 of 85

ABSTRACT:
Processes and kits for simultaneously **amplifying** and sequencing **nucleic** acid molecules, and perfonning high throughput **DNA** sequencing are described.

9. 5,928,899, Jul. 27, 1999, Cell division regulators; Jennifer L. Hillman, et al., 435/69.1, 252.3, 252.33, 254.11, 254.3, 320.1, 325, 419; 536/23.1, 23.5 [IMAGE AVAILABLE]

US PAT NO: 5,928,899 [IMAGE AVAILABLE] L10: 9 of 85

ABSTRACT:
The invention provides three human cell division regulators (HCDR) and polynucleotides which identify and encode HCDR. The invention also provides expression vectors, host cells, agonists, antibodies and antagonists. The invention also provides methods for preventing and treating disorders associated with expression of HCDR.

10. 5,928,894, Jul. 27, 1999, Human actVA-ORF4-like protein; Preeti Lal, et al., 435/69.1, 91.1, 91.2, 91.4, 252.3, 320.1; 530/350; 536/23.1, 23.5, 24.3 [IMAGE AVAILABLE]

US PAT NO: 5,928,894 [IMAGE AVAILABLE] L10: 10 of 85

ABSTRACT:
The invention provides a human actVA-ORF4-like protein (A-ORFP) and

polynucleotides which identify and encode A-ORFP. The invention also provides expression vectors, host cells, agonists, antibodies and antagonists. The invention also provides methods for treating disorders associated with expression of A-ORFP.

11. 5,928,874, Jul. 27, 1999, Nek1-related protein kinase; Olga Bandman, et al., 435/6, 194, 252.3, 320.1, 325; 536/23.2 [IMAGE AVAILABLE]

US PAT NO: 5,928,874 [IMAGE AVAILABLE] L10: 11 of 85

ABSTRACT:
The invention provides a human Nek1-related protein kinase (NRPK) and polynucleotides which identify and encode NRPK. The invention also provides expression vectors, host cells, antibodies, agonists, and antagonists. The invention also provides methods for diagnosing, treating or preventing disorders associated with expression of NRPK.

12. 5,922,595, Jul. 13, 1999, Cyclic GMP phosphodiesterase; Douglas A. Fisher, et al., 435/320.1, 6, 69.1; 530/350; 536/23.1, 23.5 [IMAGE AVAILABLE]

US PAT NO: 5,922,595 [IMAGE AVAILABLE] L10: 12 of 85

ABSTRACT:
The invention provides a human cyclic GMP phosphodiesterase (PDE9A) and polynucleotides which identify and encode PDE9A. The invention also provides expression vectors, host cells, antibodies, agonists, and antagonists. The invention also provides methods for treating or preventing disorders associated with expression of PDE9A.

13. 5,919,686, Jul. 6, 1999, NADH dehydrogenase subunits; Olga Bandman, et al., 435/191, 6, 69.1, 320.1, 325; 536/23.1, 23.2 [IMAGE AVAILABLE]

US PAT NO: 5,919,686 [IMAGE AVAILABLE] L10: 13 of 85

ABSTRACT:
The invention provides two human NADH dehydrogenase subunits (HNDS) and polynucleotides which identify and encode HNDS. The invention also provides expression vectors, host cells, agonists, antibodies and antagonists. The invention also provides methods for treating disorders associated with expression of HNDS.

14. 5,919,655, Jul. 6, 1999, Human phospholemman homolog; Olga Bandman, et al., 435/69.1, 252.3, 320.1, 325; 536/23.1, 24.3 [IMAGE AVAILABLE]

US PAT NO: 5,919,655 [IMAGE AVAILABLE] L10: 14 of 85

ABSTRACT
The present invention provides a human phospholemman homolog protein (HPLMH) and polynucleotides which identify and encode HPLMH. The invention also provides genetically engineered expression vectors and host cells comprising the **nucleic** acid sequences encoding HPLMH. The invention also provides for the use of HPLMH, and antibodies, or agonists or antagonists specifically binding HPLMH, in the prevention and treatment of diseases associated with expression of HPLMH. Additionally the invention provides for the use of antisense molecules to polynucleotides encoding HPLMH for the treatment of diseases associated with the expression of HPLMH. The invention also provides diagnostic assays which utilize the polynucleotide, or fragments or the complement thereof, and antibodies specifically binding HPLMH.

15. 5,919,627, Jul. 6, 1999, Microsomal glutathione-S-transferase; Preeti Lal, et al., 435/6, 193, 252.3, 320.1, 325, 419; 536/23.2 [IMAGE AVAILABLE]

US PAT NO: 5,919,627 [IMAGE AVAILABLE] L10: 15 of 85

ABSTRACT
The invention provides a human microsomal glutathione-S-transferase (MGST) and polynucleotides which identify and encode MGST. The invention also provides expression vectors, host cells, agonists, antibodies and antagonists. The invention also provides methods for treating disorders associated with expression of MGST.

16. 5,919,623, Jul. 6, 1999, **Nucleic** acid mutation assays; Graham Roy Taylor, 435/6; 424/94.1; 435/91.2; 536/24.3 [IMAGE AVAILABLE]

US PAT NO: 5,919,623 [IMAGE AVAILABLE] L10: 16 of 85

ABSTRACT
A method for detecting and locating mutations in **DNA** involves forming heteroduplex molecules by hybridizing single strands derived from a sample of target **DNA** under test with single strands derived from a sample of non-mutant reference **nucleic** acid so that any mutation causing an alteration in one or more nucleotide bases in the target **DNA** produces a base pair mismatch in the corresponding heteroduplex molecule. The **nucleic** acid mixture is then reacted with a mismatch-binding protein such as the mismatch repair enzyme Mut"S" which recognizes and binds to any such resultant mismatch site. Subsequent treatment with an exonuclease having unidirectional activity degrades

duplex molecules free of mismatches but mismatch-containing heteroduplex molecules are protected by the mismatch-binding protein bound to the mismatch sited therein and this limits the extent of the exonuclease degradation. The degradation products are then analyzed, e.g. by get electrophoresis, to determine the size of residual single-stranded **nucleic** acid fragments and hence to establish the location of the mutation. This method has useful applications in medical diagnosis and biotechnology.

17. 5,916,753, Jun. 29, 1999, SH3-containing proteins; Olga Bandman, et al., 435/6, 69.1, 252.3, 254.11, 320.1; 514/44; 536/23.5 [IMAGE AVAILABLE]

US PAT NO: 5,916,753 [IMAGE AVAILABLE] L10: 17 of 85

ABSTRACT:
The invention provides a human SH3-containing protein (HS3C) and polynucleotides which identify and encode HS3C. The invention also provides expression vectors, host cells, antibodies, agonists, and antagonists. The invention also provides methods for treating or preventing disorders associated with expression of HS3C.

18. 5,916,749, Jun. 29, 1999, Human phosphatase inhibitor protein; Olga Bandman, et al., 435/6, 69.2, 252.3, 320.1, 325; 536/23.1, 23.5 [IMAGE AVAILABLE]

US PAT NO: 5,916,749 [IMAGE AVAILABLE] L10: 18 of 85

ABSTRACT:
The present invention provides a novel human phosphatase inhibitor protein (HPIP) and polynucleotides which identify and encode HPIP. The invention also provides genetically engineered expression vectors and host cells comprising the **nucleic** acid sequences encoding HPIP and a method for producing HPIP. The invention also provides for agonists, antibodies, or antagonists specifically binding HPIP, and their use, in the prevention and treatment of diseases associated with expression of HPIP. Additionally, the invention provides for the use of antisense molecules to polynucleotides encoding HPIP for the treatment of diseases associated with the expression of HPIP. The invention also provides diagnostic assays which utilize the polynucleotide, or fragments or the complement thereof, and antibodies specifically binding HPIP.

19. 5,912,128, Jun. 15, 1999, Human ena/VASP-like protein splice variant; Preeti Lal, et al., 435/6, 69.1, 91.2, 252.3, 320.1; 436/94; 530/350; 536/23.5 [IMAGE AVAILABLE]

US PAT NO: 5,912,128 [IMAGE AVAILABLE] L10: 19 of 85

ABSTRACT:
The invention provides a human ena/VASP-like protein splice variant (EVL1) and polynucleotides which identify and encode EVL1. The invention also provides expression vectors, host cells, antibodies, agonists, and antagonists. The invention also provides methods for treating or preventing disorders associated with expression of EVL 1.

20. 5,892,012, Apr. 6, 1999, Rab Proteins; Jennifer L. Hillman, et al., 536/23.1; 435/6, 69.1, 320.1; 530/350; 536/23.5 [IMAGE AVAILABLE]

US PAT NO: 5,892,012 [IMAGE AVAILABLE] L10: 20 of 85

ABSTRACT:
The invention provides three human Rab proteins (RABP) and polynucleotides which identify and encode RABP. The invention also provides expression vectors, host cells, agonists, antibodies and antagonists. The invention also provides methods for treating disorders associated with expression of RABP.

21. 5,888,793, Mar. 30, 1999, Human lysophosphatidic acid acyltransferase; Jennifer L. Hillman, et al., 435/193, 6, 252.3, 252.33, 254.11, 254.3, 320.1, 325, 419; 536/23.2 [IMAGE AVAILABLE]

US PAT NO: 5,888,793 [IMAGE AVAILABLE] L10: 21 of 85

ABSTRACT:
The invention provides a human lysophosphatidic acid acyltranferase (HLPAAT) and polynucleotides which identify and encode HLPAAT. The invention also provides expression vectors, host cells, antibodies, agonists, and antagonists. The invention also provides methods for treating or preventing disorders associated with expression of HLPAAT.

22. 5,888,742, Mar. 30, 1999, Human phospholipid binding proteins; Preeti Lal, et al., 435/6, 69.1, 252.3, 320.1, 325; 514/44; 530/350; 536/23.5 [IMAGE AVAILABLE]

US PAT NO: 5,888,742 [IMAGE AVAILABLE] L10: 22 of 85

ABSTRACT:
The invention provides two human phospholipid binding proteins (PLBP) and polynucleotides which identify and encode PLBP. The invention also provides expression vectors, host cells, agonists, antibodies and

antagonists. The invention also provides methods for treating and preventing disorders associated with expression of PLBP.

23. 5,888,730, Mar. 30, 1999, Y chromosome specific **nucleic** acid probe and method for identifying the Y chromosome in SITU; Joe W. Gray, et al., 435/6; 536/24.3 [IMAGE AVAILABLE]

US PAT NO: 5,888,730 [IMAGE AVAILABLE] L10: 23 of 85

ABSTRACT:
A method for producing a Y chromosome specific probe selected from highly repeating sequences on that chromosome is described. There is little or no nonspecific binding to autosomal and X chromosomes, and a very large signal is provided. Inventive primers allowing the use of **PCR** for both sample **amplification** and probe production are described, as is their use in producing large **DNA** chromosome painting sequences.

24. 5,882,857, Mar. 16, 1999, Internal positive controls for **nucleic** acid **amplification**; Linda M. Western, et al., 435/6, 5, 91.2; 536/23.1, 24.3, 24.32, 24 33 [IMAGE AVAILABLE]

US PAT NO: 5,882,857 [IMAGE AVAILABLE] L10: 24 of 85

ABSTRACT:
The present invention relates to an improvement in a method for **amplifying** a target sequence of a target polynucleotide. The method comprises combining a sample suspected of containing the target polynucleotide with reagents for **amplifying** the target sequence and subjecting the combination to conditions wherein the target sequence if present is **amplified**. The present improvement comprises including in the combination a control oligonucleotide and a control polynucleotide that has a sequence that is hybridizable with the control oligonucleotide. When the control oligonucleotide is bound to the control polynucleotide, the ability of a primer to chain extend along the control polynucleotide is reduced Optionally, the control oligonucleotide is part of the control polynucleotide. The method finds particular application in the area of **nucleic** acid **amplification** and detection.

25. 5,876,963, Mar. 2, 1999, Human nucleotide pyrophosphohydrolase; Peter Mitchell, et al., 435/69.1, 194, 195, 252.3, 320.1; 536/23.5, 24.3, 24.31 [IMAGE AVAILABLE]

US PAT NO: 5,876,963 [IMAGE AVAILABLE] L10: 25 of 85

ABSTRACT:
The invention provides a human nucleotide pyrophosphohydrolase (NTPPH-1) and polynucleotides which identify and encode NTPPH-1. The invention also provides expression vectors, host cells, agonists, antibodies and antagonists. The invention also provides methods for treating disorders associated with expression of NTPPH-1.

26. 5,876,942, Mar. 2, 1999, Process for sexing cow embryos; Winston Teng-Kuei Cheng, et al., 435/6; 536/23.1, 24.3 [IMAGE AVAILABLE]

US PAT NO: 5,876,942 [IMAGE AVAILABLE] L10: 26 of 85

ABSTRACT:
A **rapid**, highly reproducible and sensitive technique has been successfully developed for sexing the cow embryos, by method of **polymerase** chain reaction (**PCR**) against the amelogenin (bAML) genes located on both X- and Y-chromosomes of the Holstein dairy cattle. Results from **DNA** sequence analysis showed that there was only 45% homology between the intron 5 of AMLX and AMLY genes. Based on these sequences a pair of sex-specific primers, pbAML5XY(+) and pbAML5XY (-),were designed allowing to **amplify** a single fragment of 476-bp from the female cattle and two fragments of 476-bp and 341-bp from the male ones, respectively. The most important feature is that the precise sensitivity of sex-determination was confirmed to be reached as minimum template as trace amount of genomic **DNA** content in either a single lymphocyte or a single blastomere isolated from cow embryo at day-6 to day-7. Moreover, neither those of complicated procedures for purifying the **DNA** prior the **PCR** nor any extra pair of primers for serving as internal control is thought to be essential and the sex-determination of over hundred embryos can be completed at once within 4hrs.

27. 5,876,933, Mar. 2, 1999, Method and system for genotyping; Mark W. Perlin, 435/6, 91.2 [IMAGE AVAILABLE]

US PAT NO: 5,876,933 [IMAGE AVAILABLE] L10: 27 of 85

ABSTRACT:
The present invention pertains to a process which can be fully automated for accurately determining the alleles of **genetic** markers. More specifically, the present invention is related to performing **PCR** **amplification** on locations of **DNA** to generate a reproducible pattern, labeling the **PCR** products, converting the labels into a signal, operating on the signal, and then determining the genotype of the location of the **DNA**. An **amplification** can include multiple locations from the **DNA** of one or more individuals. The invention also

pertains to genetics applications and systems which can effectively use this genotyping information.

28. 5,874,282, Feb. 23, 1999, Purified **DNA** **polymerase** from Bacillus stearothermophilus ATTC 12980; Michael Garth Riggs, et al., 435/252.3, 194, 320.1, 325, 419; 536/23.2, 24.32 [IMAGE AVAILABLE]

US PAT NO: 5,874,282 [IMAGE AVAILABLE] L10: 28 of 85

ABSTRACT:
Composition and methods for the expression of recombinant **DNA** **polymerase** enzymes derived from Bacillus stearothermophilus. The present invention also concerns methods for purifying recombinant Bst **DNA** **polymerase** enzymes, compositions containing the purified enzymes in a form suitable for conducting biochemical reactions, and methods for using the purified enzymes.

29. 5,874,217, Feb. 23, 1999, Microsatellite sequences for canine genotyping; Joy Halverson, et al., 435/6, 91.2; 536/23.1, 24.3, 24.33 [IMAGE AVAILABLE]

US PAT NO: 5,874,217 [IMAGE AVAILABLE] L10: 29 of 85

ABSTRACT:
Methods of genotyping canines by analysis of polymorphisms in the number of microsatellite **DNA** repeats are provided. The internal repeat sequence is **amplified** by the use of specific primers. The number of repeats, and therefore the distance between the primers, is highly variable in a population, thereby providing an allelic marker for the locus. The combined information from multiple loci provides a means of distinguishing individuals, even among inbred dog breeds, for parentage testing, forensic testing and analysis of individuals relatedness.

30. 5,871,973, Feb. 16, 1999, Cell division regulators; Jennifer L. Hillman, et al., 435/69.1, 252.3, 252.33, 254.11, 254.3, 320.1, 325, 410; 530/350; 536/23.1, 23.5 [IMAGE AVAILABLE]

US PAT NO: 5,871,973 [IMAGE AVAILABLE] L10: 30 of 85

ABSTRACT:
The invention provides three human cell division regulators (HCDR) and polynucleotides which identify and encode HCDR. The invention also provides expression vectors, host cells, agonists, antibodies and antagonists. The invention also provides methods for preventing and treating disorders associated with expression of HCDR.

31. 5,871,971, Feb. 16, 1999, Human developmentally regulated GTP-binding protein; Jennifer L. Hillman, et al., 435/69.1, 6, 91.2, 252.3; 536/23.1, 23.5, 24.33 [IMAGE AVAILABLE]

US PAT NO: 5,871,971 [IMAGE AVAILABLE] L10: 31 of 85

ABSTRACT:
The invention provides a human human developmentally regulated GTP-binding protein (HDRG) and polynucleotides which identify and encode HDRG. The invention also provides expression vectors, host cells, agonists, antibodies and antagonists. The invention also provides methods for treating disorders associated with expression of HDRG.

32. 5,871,930, Feb. 16, 1999, High affinity immunoglobulin E receptor-like protein; Olga Bandman, et al., 435/6, 69.1, 69.3, 91.2, 320.1; 530/350; 536/23.5, 24.31 [IMAGE AVAILABLE]

US PAT NO: 5,871,930 [IMAGE AVAILABLE] L10: 32 of 85

ABSTRACT:
The invention provides a human high affinity immunoglobulin E receptor-like protein (IGERB) and polynucleotides which identify and encode IGERB. The invention also provides expression vectors, host cells, agonists, antibodies and antagonists. The invention also provides methods for treating disorders associated with expression of IGERB.

33. 5,871,697, Feb. 16, 1999, Method and apparatus for identifying, classifying, or quantifying **DNA** sequences in a sample without sequencing; Jonathan Marc Rothberg, et al., 422/68.1; 435/5, 6, 91.2; 536/23.1, 24.3, 24.33; 702/20 [IMAGE AVAILABLE]

US PAT NO: 5,871,697 [IMAGE AVAILABLE] L10: 33 of 85

ABSTRACT:
This invention provides methods by which biologically derived **DNA** sequences in a mixed sample or in an arrayed single sequence clone can be determined and classified without sequencing. The methods make use of information on the presence of carefully chosen target subsequences, typically of length from 4 to 8 base pairs, and preferably the length between target subsequences in a sample **DNA** sequence together with **DNA** sequence databases containing lists of sequences likely to be present in the sample to determine a sample sequence. The preferred method uses restriction endonucleases to recognize target subsequences and cut the sample sequence. Then carefully chosen recognition moieties

are ligated to the cut fragments, the fragments **amplified**, and the experimental observation made. **Polymerase** chain reaction (**PCR**) is the preferred method of **amplification**. Another embodiment of the invention uses information on the presence or absence of carefully chosen target subsequences in a single sequence clone together with **DNA** sequence databases to determine the clone sequence. Computer implemented methods are provided to analyze the experimental results and to determine the sample sequences in question and to carefully choose target subsequences in order that experiments yield a maximum amount of information.

34. 5,869,311, Feb. 9, 1999, Mitochondrial processing peptidase subunit; Olga Bandman, et al , 435/212, 252.3, 252.33, 254.11, 254.3, 320.1, 325, 419; 536/23.1, 23.2 [IMAGE AVAILABLE]

US PAT NO: 5,869,311 [IMAGE AVAILABLE] L10: 34 of 85

ABSTRACT:
The invention provides a human mitochondrial processing peptidase subunit (MPPS-1) and polynucleotides which identify and encode MPPS-1. The invention also provides expression vectors, host cells, agonists, antibodies and antagonists. The invention also provides methods for treating disorders associated with expression of MPPS-1.

35. 5,869,252, Feb. 9, 1999, Method of multiplex ligase chain reaction; Stanley R. Bouma, et al., 435/6, 91.2 [IMAGE AVAILABLE]

US PAT NO: 5,869,252 [IMAGE AVAILABLE] L10: 35 of 85

ABSTRACT:
The invention relates to multiplex ligase chain reaction (LCR). Two or more purative target sequences are selected. For each one, a set of four probes is used simultaneously to **amplify** the putative sequence if it is present in the sample. Preferably, all the amplicons are labeled with a common label/hapten and, for each different target, with a unique label/hapten. The invention also relates to an immunochromatographic strip device and method employing a diagonal array of capture spots.

36. 5,866,332, Feb. 2, 1999, Human myeloid terminal differentiation response gene; Benjamin Graeme Cocks, et al., 435/6, 69.1, 91.2, 252.3, 320.1, 325; 514/44; 536/23.5 [IMAGE AVAILABLE]

US PAT NO: 5,866,332 [IMAGE AVAILABLE] L10: 36 of 85

ABSTRACT:

The present invention provides polynucleotide and amino acid sequences which encode and identify a novel human myeloid terminal differentiation response gene designated MYD118. The present invention also provides for myd118 antisense molecules. The invention further provides genetically engineered expression vectors and host cells for the production of purified MYD118 polypeptide; antibodies, antagonists and inhibitors of MYD118 polypeptide; and pharmaceutical compositions and methods of treatment based on polynucleotide sequences encoding MYD118 and MYD118 polypeptide. The invention specifically provides for use of the myd118 polynucleotide sequences as a diagnostic composition for the detection of myeloproliferative diseases and leukemias. The invention also relates to therapeutic methods and compositions based upon the nucleotide sequences for myd118. The invention further provides antibodies which specifically bind to MYD118.

37. 5,863,735, Jan. 26, 1999, Human transmembrane 4 superfamily protein; Jennifer L. Hillman, et al., 435/6, 325; 536/23.1, 24.31 [IMAGE AVAILABLE]

US PAT NO: 5,863,735 [IMAGE AVAILABLE] L10: 37 of 85

ABSTRACT:
The present invention provides a novel human integral membrane (TMP-1) and polynucleotides which identify and encode TMP-1. The invention also provides genetically engineered expression vectors and host cells comprising the **nucleic** acid sequences encoding TMP-1 and a method for producing TMP-1. The invention also provides for agonists, antibodies, or antagonists specifically binding TMP-1, and their use, in the prevention and treatment of diseases associated with expression of TMP-1. Additionally, the invention provides for the use of antisense molecules to polynucleotides encoding TMP-1 for the treatment of diseases associated with the expression of TMP-1. The invention also provides diagnostic assays which utilize the polynucleotide, or fragments or the complement thereof, and antibodies specifically binding TMP-1.

38. 5,858,750, Jan. 12, 1999, Human retinol dehydrogenase type II homolog; Olga Bandman, et al., 435/190, 252.3, 252.33, 320.1, 325, 419; 536/23.2, 24.31 [IMAGE AVAILABLE]

US PAT NO: 5,858,750 [IMAGE AVAILABLE] L10: 38 of 85

ABSTRACT:
The invention provides a human retinol dehydrogenase type II homolog (HRoDH) and polynucleotides which identify and encode HRoDH. The invention also provides expression vectors, host cells, agonists,

antibodies and antagonists. The invention also provides methods for treating disorders associated with expression of HRoDH.

39. 5,858,719, Jan. 12, 1999, Polynucleotides encoding human ATP binding-cassette transport protein and methods of use; Jennifer L. Hillman, et al., 435/69.1, 6, 252.3, 320.1, 325; 536/23.1 [IMAGE AVAILABLE]

US PAT NO: 5,858,719 [IMAGE AVAILABLE] L10: 39 of 85

ABSTRACT:
The invention provides a human ATP-binding cassette transport protein (ABCtxH) and polynucleotides which identify and encode ABCtxH. The invention also provides expression vectors, host cells, agonists, antibodies and antagonists. The invention also provides methods for treating disorders associated with expression of ABCtxH.

40. 5,858,714, Jan. 12, 1999, Human metaxin protein; Jennifer L. Hillman, et al., 435/69.1, 6, 91.2, 252.3, 320.1; 536/23.1, 23.5, 24.3 [IMAGE AVAILABLE]

US PAT NO: 5,858,714 [IMAGE AVAILABLE] L10 40 of 85

ABSTRACT:
The invention provides a human metaxin protein and polynucleotides which identify and encode MTXP-1. The invention also provides expression vectors, host cells, agonists, antibodies and antagonists. The invention also provides methods for treating disorders associated with expression of MTXP-1.

41. 5,851,774, Dec. 22, 1998, Human MLF3 protein; Jennifer L. Hillman, et al., 435/6, 69.1, 69.3, 252.3, 320.1; 514/44; 530/350, 380; 536/23.1, 23.5 [IMAGE AVAILABLE]

US PAT NO: 5,851,774 [IMAGE AVAILABLE] L10 41 of 85

ABSTRACT:
The present invention provides a novel human integral membrane (MLF3) and polynucleotides which identify and encode MLF3. The invention also provides genetically engineered expression vectors and host cells comprising the **nucleic** acid sequences encoding MLF3 and a method for producing MLF3. The invention also provides for agonists, antibodies, or antagonists specifically binding MLF3, and their use, in the prevention and treatment of diseases associated with expression of MLF3. Additionally, the invention provides for the use of antisense molecules

to polynucleotides encoding MLF3 for the treatment of diseases associated with the expression of MLF3. The invention also provides diagnostic assays which utilize the polynucleotide, or fragments or the complement thereof, and antibodies specifically binding MLF3.

42. 5,849,556, Dec. 15, 1998, Human growth-related CDC10 homolog; Jennifer L. Hillman, et al., 435/195, 6, 252.3, 252.33, 254.11, 254.3, 320.1, 325, 410; 530/350; 536/23.1, 23.2 [IMAGE AVAILABLE]

US PAT NO: 5,849,556 [IMAGE AVAILABLE] L10: 42 of 85

ABSTRACT:
The invention provides a human growth-related CDC10 homolog (GR-SEP) and polynucleotides which identify and encode GR-SEP. The invention also provides expression vectors, host cells, agonists, antibodies and antagonists. The invention also provides methods for treating and preventing disorders associated with expression of GR-SEP.

43. 5,849,546, Dec. 15, 1998, Methods for using mutant **RNA** polymerases with reduced discrimination between non-canonical and canonical nucleoside triphosphates; Rui Sousa, et al., 435/91.5, 91.2; 536/24.3, 24.5 [IMAGE AVAILABLE]

US PAT NO: 5,849,546 [IMAGE AVAILABLE] L10: 43 of 85

ABSTRACT:
A method for synthesizing a **nucleic** acid molecule comprising at least one non-canonical nucleoside triphosphate using a mutant **polymerase** having a reduced discrimination between canonical and non-canonical substrates is disclosed. The method comprises incubating a template **nucleic** acid in a reaction mixture comprising the mutant **nucleic** acid **polymerase** and the appropriate canonical and non-canonical nucleoside triphosphates which are desired substrates for the mutant **nucleic** acid **polymerase**. The present invention is also a method of determining the sequence of a **nucleic** acid molecule using the mutant **polymerase** to create a **nucleic** acid molecule comprising at least one non-canonical nucleoside triphosphate.

44. 5,849,528, Dec. 15, 1998, Polynucleotides encoding a human S100 protein; Jennifer L. Hillman, et al., 435/69.1, 6, 252.3, 320.1, 325; 530/350; 536/23.1, 23.5, 24.3, 24.31 [IMAGE AVAILABLE]

US PAT NO: 5,849,528 [IMAGE AVAILABLE] L10: 44 of 85

ABSTRACT:

The invention provides two human S100 proteins designated individually as S100P1 and S100P2 and collectively as S100P, and polynucleotides which identify and encode S100P. The invention also provides expression vectors, host cells, agonists, antibodies and antagonists. The invention also provides methods for treating disorders associated with expression of S100P.

45. 5,849,491, Dec. 15, 1998, Method for isolating xylanase gene sequences from soil **DNA**, compositions useful in such method and compositions obtained thereby; Christopher C. A. Radomski, et al., 435/6, 91.2 [IMAGE AVAILABLE]

US PAT NO: 5,849,491 [IMAGE AVAILABLE] L10: 45 of 85

ABSTRACT:
Xylanase **DNA** is recovered from soil by **PCR** **amplification** using degenerate primers. Because of the complexity of the soil samples, it is likely that the recovered product will include more than one species of polynucleotide. These recovered copies may be cloned into a host organism to produce additional copies of each individual species prior to characterization by sequencing. Recovered **DNA** which is found to vary from known xylanases can be used in several ways to facilitate production of novel xylanases for industrial application. First, the recovered **DNA**, or probes corresponding to portions thereof, can be used as a probe to screen **DNA** libraries and recover intact xylanase genes including the unique regions of the recovered **DNA**. **Second**, the recovered **DNA** or polynucleotides corresponding to portions thereof, can be inserted into a known xylanase gene to produce a recombinant xylanase gene with the sequence variations of the recovered **DNA**.

46. 5,847,094, Dec. 8, 1998, UBCH7-like ubiquitin-conjugating enzyme; Olga Bandman, et al., 536/23.1; 435/6, 252.3; 536/24.3 [IMAGE AVAILABLE]

US PAT NO: 5,847,094 [IMAGE AVAILABLE] L10: 46 of 85

ABSTRACT:
The present invention provides a human ubiquitin-conjugating enzyme (UBCPB) and polynucleotides which identify and encode UBCPB. The invention also provides genetically engineered expression vectors and host cells comprising the **nucleic** acid sequences encoding UBCPB and a method for producing UBCPB. The invention also provides for agonists, antibodies, or antagonists specifically binding UBCPB, and their use, in the prevention and treatment of diseases associated with expression of UBCPB. Additionally, the invention provides for the use of antisense

molecules to polynucleotides encoding UBCPB for the treatment of diseases associated with the expression of UBCPB. The invention also provides diagnostic assays which utilize the polynucleotide, or fragments or the complement thereof, and antibodies specifically binding UBCPB.

47. 5,843,730, Dec. 1, 1998, Method for hypermutagenesis of nucleotides; Simon Wain-Hobson, et al., 435/91.1, 69.1, 91.2, 91.21, 91.3, 91.51 [IMAGE AVAILABLE]

US PAT NO: 5,843,730 [IMAGE AVAILABLE] L10: 47 of 85

ABSTRACT:
The present invention features a method for introducing hypermutations into a target **DNA** or **RNA** sequence of interest, characterized in that said method comprises the steps of:
(a) transcribing a **RNA** into **DNA** in a reaction mixture comprising a reverse transcriptase, varying biased concentrations of deoxynucleoside triphosphates to produce hypermutations and an oligonucleotide primer that is partially complementary to the 3' end of said **RNA**; and
(b) recovering said **DNA** sequences.

48. 5,840,482, Nov. 24, 1998, Y chromosome specific **nucleic** acid probe and method for determining the Y chromosome in situ; Joe W. Gray, et al., 435/6; 536/24.31, 24.33 [IMAGE AVAILABLE]

US PAT NO: 5,840,482 [IMAGE AVAILABLE] L10: 48 of 85

ABSTRACT
A method for producing a Y chromosome specific probe selected from highly repeating sequences on that chromosome is described. There is little or no nonspecific binding to autosomal and X chromosomes, and a very large signal is provided. Inventive primers allowing the use of **PCR** for both sample **amplification** and probe production are described, as is their use in producing large **DNA** chromosome painting sequences.

49. 5,830,664, Nov. 3, 1998, Method for the detection of target **nucleic** acid; Viola Rosemeyer, et al., 435/6, 5, 91.1, 91.2; 536/23.1, 24.3, 24.32, 24.33 [IMAGE AVAILABLE]

US PAT NO: 5,830,664 [IMAGE AVAILABLE] L10: 49 of 85

ABSTRACT:
Method for the sensitive detection of a target **nucleic** acid by hybridization with a probe **nucleic** acid. The latter contains a part

which can hybridize with the target **nucleic** acid and a **nucleic** acid-specific part which does not hybridize with the target **nucleic** acid. The method further comprises cleavage of the probe **nucleic** acid, hybridization of a cleavage product of the probe **nucleic** acid containing the part that does not hybridize with the target **nucleic** acid with a matrix **nucleic** acid containing a part that can be hybridized with the cleavage product and a part that cannot be hybridized with the probe **nucleic** acid. The method also comprises the determination of the hybrid consisting of the cleavage product and the matrix **nucleic** acid and a reagent kit suitable for this purpose.

50. 5,827,480, Oct. 27, 1998, **Nucleic** acid **amplification** reaction apparatus; Lawrence A. Haff, et al., 422/68.1, 50, 62, 63, 67, 69, 82.05; 435/6, 91.1, 91.2, 283.1, 286.1, 286.2, 286.5, 287.1, 287.2, 287.3, 289.1, 293.1 [IMAGE AVAILABLE]

US PAT NO 5,827,480 [IMAGE AVAILABLE] L10: 50 of 85

ABSTRACT:
Apparatus and method for performing a **nucleic** acid **amplification** reaction and preferably a **polymerase** chain reaction (**PCR**) in a reaction mixture in at least one **capillary** tube. Several different embodiments are disclosed. One embodiment cycles a sample through a **capillary** tube loop passing through two thermostatted fluid baths. Another embodiment has the **capillary** tube routed alternatingly between two heat exchangers to that the sample makes only one pass through the tube. Other embodiments maintain the heat exchangers stationary and translate the samples between them. Still further embodiments maintain the samples stationary and either automatically translate or rotate the heat exchangers past the samples contained within the **capillary** tubes to perform the thermal cycles necessary for the **amplification** reaction.

51. 5,824,481, Oct. 20, 1998, **DNA** analyzing method; Hideki Kambara, et al., 435/6 [IMAGE AVAILABLE]

US PAT NO 5,824,481 [IMAGE AVAILABLE] L10: 51 of 85

ABSTRACT:
A **DNA** analyzing method which bonds a first oligomer of known base sequence to a **DNA** fragment obtained by digesting a **DNA** sample with a restrictive enzyme. The oligomer and **DNA** fragment are hybridized to other oligomers which have the sequences of all combinations of the types of bases within the length of several bases following the known base sequence. The presence or absence of

hybridization or complementary **DNA** strand extension is determined and identifies the **DNA** fragment terminal sequence from this result. The **DNA** fragments are then fractionated and analyzed to determine the sequence. This **DNA** analyzing method provides an effective analysis of mixtures of long DNAs or **DNA** fragments.

52. 5,817,497, Oct. 6, 1998, Glutathione s-transferase; Surya K. Goli, et al., 435/193, 252.3, 252.33, 320.1; 536/23.1, 23.2, 23.5 [IMAGE AVAILABLE]

US PAT NO: 5,817,497 [IMAGE AVAILABLE] L10 52 of 85

ABSTRACT:
The present invention provides a human glutathione S-transferase (HGST) and polynucleotides which identify and encode HGST. The invention also provides genetically engineered expression vectors and host cells comprising the **nucleic** acid sequences encoding HGST and a method for producing HGST. The invention also provides for agonists, antibodies, or antagonists specifically binding HGST, and their use, in the prevention and treatment of cancer and other diseases associated with the expression of HGST. Additionally, the invention provides for the use of antisense molecules to polynucleotides encoding HGST for the treatment of cancer and other diseases associated with the expression of HGST. The invention also provides diagnostic assays which utilize the polynucleotide, or fragments or the complement thereof, and antibodies specifically binding HGST.

53. 5,817,482, Oct. 6, 1998, Disease related nucleotide kinases; Olga Bandman, et al., 435/69.1, 6, 194, 252.3, 320.1; 530/350; 536/23.1, 23.5, 24.31, 24.33 [IMAGE AVAILABLE]

US PAT NO: 5,817,482 [IMAGE AVAILABLE] L10 53 of 85

ABSTRACT:
The invention provides human nucleotide kinases and polynucleotides which identify and encode DRNK. The invention also provides expression vectors, host cells, agonists, antibodies and antagonists. The invention also provides methods for treating disorders associated with expression of DRNK.

54. 5,804,419, Sep. 8, 1998, Calcium-binding phosphoprotein; Olga Bandman, et al., 435/69.1, 6, 252.3, 254.11, 320.1, 325; 536/23.5, 24.31 [IMAGE AVAILABLE]

US PAT NO: 5,804,419 [IMAGE AVAILABLE] L10 54 of 85

ABSTRACT:
The invention provides a human calcium-binding phosphoprotein (CBPP-1) and polynucleotides which identify and encode CBPP-1. The invention also provides expression vectors, host cells, agonists, antibodies and antagonists. The invention also provides methods for treating disorders associated with expression of CBPP-1.

55. 5,804,375, Sep. 8, 1998, Reaction mixtures for detection of target **nucleic** acids; David H. Gelfand, et al., 435/6, 91.1, 91.2, 810; 436/501; 536/23.1, 24.1, 24.3, 24.31, 24.32, 24.33 [IMAGE AVAILABLE]

US PAT NO: 5,804,375 [IMAGE AVAILABLE] L10: 55 of 85

ABSTRACT:
A process of detecting a target **nucleic** acid using labeled oligonucleotides uses the 5' to 3' nuclease activity of a **nucleic** acid **polymerase** to cleave annealed labeled oligonucleotide from hybridized duplexes and release labeled oligonucleotide fragments for detection. This process is easily incorporated into a **PCR** **amplification** assay.

56. 5,795,724, Aug. 18, 1998, Human N-acetyl transferase; Jennifer L. Hillman, et al., 435/6, 193, 252.3, 320.1; 536/23.2 [IMAGE AVAILABLE]

US PAT NO: 5,795,724 [IMAGE AVAILABLE] L10: 56 of 85

ABSTRACT:
The invention provides a human N-acetyl transferase (NACTH) and polynucleotides which identify and encode NACTH. The invention also provides expression vectors, host cells, agonists, antibodies and antagonists. The invention also provides methods for treating disorders associated with expression of NACTH.

57. 5,789,168, Aug. 4, 1998, Method for **amplification** and sequencing of **nucleic** acid polymers; James Leushner, et al., 435/6, 91.2 [IMAGE AVAILABLE]

US PAT NO: 5,789,168 [IMAGE AVAILABLE] L10: 57 of 85

ABSTRACT:
Amplification and sequencing of a selected region of a target **nucleic** acid polymer are be performed in a single vessel. The sample is added to an **amplification** mixture containing a thermally stable **polymerase** and nucleoside feedstocks. Chain terminating

dideoxynucleosides are added either at the beginning of the **amplification** reaction or during the course of the **amplification**. A thermally stable **polymerase** which incorporates dideoxynucleotides into an extending oligonucleotide at a rate which is no less than about 0.4 times the rate of incorporation of deoxynucleosides can be used in the **amplification** mixture or added with the chain terminating nucleoside.

58. 5,786,148, Jul. 28, 1998, Polynucleotides encoding a novel prostate-specific kallikrein; Olga Bandman, et al., 435/6, 212, 252.3, 320.1; 536/23.2, 24.31 [IMAGE AVAILABLE]

US PAT NO: 5,786,148 [IMAGE AVAILABLE] L10: 58 of 85

ABSTRACT:
The present invention provides a human prostate-specific kallikrein (HPSK) and polynucleotides which identify and encode HPSK. The invention also provides genetically engineered expression vectors and host cells comprising the **nucleic** acid sequences encoding HPSK and a method for producing HPSK. The invention also provides for agonists, antibodies, or antagonists specifically binding HPSK, and their use, in the prevention and treatment of diseases associated with expression of HPSK. Additionally, the invention provides for the use of antisense molecules to polynucleotides encoding HPSK for the treatment of diseases associated with the expression of HPSK. The invention also provides diagnostic assays which utilize the polynucleotide, or fragments or the complement thereof, and antibodies specifically binding HPSK.

59. 5,779,977, Jul. 14, 1998, **Nucleic** acid **amplification** reaction apparatus and method; Lawrence A. Haff, et al., 422/68.1, 50, 62, 82.05, 99, 129, 131, 132, 134, 138, 149, 188, 198, 202, 203; 435/91.1, 91.2, 91.5, 283.1, 286.1, 286.5, 289.1, 293.1, 303.1; 436/51 [IMAGE AVAILABLE]

US PAT NO: 5,779,977 [IMAGE AVAILABLE] L10: 59 of 85

ABSTRACT:
Apparatus and method for performing a **nucleic** acid **amplification** reaction and preferably a **polymerase** chain reaction (**PCR**) in a reaction mixture in at least one **capillary** tube. Several different embodiments are disclosed. One embodiment cycles a sample through a **capillary** tube loop passing through two thermostatted fluid baths. Another embodiment has the **capillary** tube routed alternatingly between two heat exchangers to that the sample makes only one pass through the tube. Other embodiments maintain the heat exchangers

stationary and translate the samples between them. Still further embodiments maintain the samples stationary and either automatically translate or rotate the heat exchangers past the samples contained within the **capillary** tubes to perform the thermal cycles necessary for the **amplification** reaction.

60. 5,756,299, May 26, 1998, Human carbonyl reductase; Jennifer L. Hillman, et al., 435/6, 199, 252.3, 320.1, 325, 348, 358, 367; 536/23.2 [IMAGE AVAILABLE]

US PAT NO: 5,756,299 [IMAGE AVAILABLE] L10: 60 of 85

ABSTRACT:
The present invention provides a human carbonyl reductase (HCRD) and polynucleotides which identify and encode HCRD. The invention also provides genetically engineered expression vectors and host cells comprising the **nucleic** acid sequences encoding HCRD and a method for producing HCRD. The invention also provides for agonists, antibodies, or antagonists specifically binding HCRD, and their use, in the prevention and treatment of diseases associated with expression of HCRD. Additionally, the invention provides for the use of antisense molecules to polynucleotides encoding HCRD for the treatment of diseases associated with the expression of HCRD. The invention also provides diagnostic assays which utilize the polynucleotide, or fragments or the complement thereof, and antibodies specifically binding HCRD.

61. 5,750,345, May 12, 1998, Detection of human .alpha.-thalassemia mutations and their use as predictors of blood-related disorders; Lemuel J. Bowie, 435/6, 91.2; 536/24.33 [IMAGE AVAILABLE]

US PAT NO: 5,750,345 [IMAGE AVAILABLE] L10: 61 of 85

ABSTRACT:
The invention is based on the discovery that adults having a genotype comprising a hemoglobin .alpha.-gene deletion are significantly more likely to be hypertensive than adults having a normal (.alpha..alpha./.alpha..alpha.) gentoype. The invention provides an improved method for determining a human subject's genotype at the alpha.-gene loci; a method of screening a human subject for an increased potential of developing hypertension and other blood-related disorders; and provides an apparatus/kit for screening a human subject for a risk of developing hypertension and other blood-related disorders.

62. 5,744,306, Apr. 28, 1998, Methods for **nucleic** acid detection, sequencing, and cloning using exonuclease; James J. Murtagh, Jr., et al.,

435/6; 424/94.1; 435/5, 91.1, 91.2, 174; 536/23.1, 24.3, 24.33, 26.6
[IMAGE AVAILABLE]

US PAT NO 5,744,306 [IMAGE AVAILABLE] L10: 62 of 85

ABSTRACT
The present invention provides a method of detecting the presence of a nucleotide sequence within a double-stranded **DNA** in a sample comprising: a. digesting the double-stranded **DNA** with an exonuclease which converts at least a portion of the double-stranded **DNA** to single-stranded **DNA**; b. hybridizing the single-stranded **DNA** with i) a first **nucleic** acid probe adapted with a moiety which can be captured to a solid support, and ii) a **second** **nucleic** acid probe labeled with a detectable moiety which can hybridize with the single-stranded **DNA** adjacent the hybridized first **nucleic** acid probe; c. ligating the hybridized first and **second** **nucleic** acid probes; d. capturing the moiety on the first **nucleic** acid probe hybridized to the **DNA** to the solid support; e. denaturing the ligated first and **second** **nucleic** acid probes from the hybridized single-stranded **DNA**; f. removing uncaptured labeled probe; and, g. detecting the presence of captured detectable moiety, the presence of captured detectable moiety indicating the presence of the nucleotide sequence within the double-stranded **DNA** in the sample.

63. 5,741,678, Apr. 21, 1998, Quantitative method for early detection of mutant alleles and diagnostic kits for carrying out the method; Zeev A. Ronai, 435/91.2, 6, 91.1, 91.53, 810; 536/24.33 [IMAGE AVAILABLE]

US PAT NO 5,741,678 [IMAGE AVAILABLE] L10: 63 of 85

ABSTRACT:
There is disclosed a quantitative sensitive method to enable the detection of point mutations at a known site to a diagnostic kit which uses a multi step (for example, four steps) or a single step reaction. The method uses selective **polymerase** chain reaction (**PCR**) **amplification** of mutant test gene sequences involving first stage **amplification** of both mutant and wild-type sequences, first stage restriction enzyme digestion of only wild-type sequences, **second** stage **amplification** of undigested **amplified** fragments enriched in mutant sequences and **second** stage digestion of previously undigested wild-type sequences. Long and short tail primers are used in the first and **second** stages of **amplification** respectively to enable selective **amplification** (in the **second** stage) of only previously **amplified** material and none of the original test genomic **DNA**. The short tail primers are labelled with biotin and fluorescence at their

respective 5' and 3' ends to enable easy detection and quantitation of mutations in the test gene via automated fluorescence readers. The use of multi steps as well as a single step reaction is disclosed. The process is exemplified with respect to its use in detecting mutations in the human K-ras gene, yet it is applicable for any given mutation in a defined site.

64. 5,736,333, Apr. 7, 1998, Passive internal references for the detection of **nucleic** acid **amplification** products; Kenneth J. Livak, et al., 435/6, 91.2; 536/23.1 [IMAGE AVAILABLE]

US PAT NO 5,736,333 [IMAGE AVAILABLE] L10: 64 of 85

ABSTRACT:
The invention relates to passive internal references for use in quantitating the formation of **amplification** products in a **nucleic** **amplification** reaction. The internal **amplification** reference molecules of the invention comprise a first and **second** fluorophore joined together through a backbone connector. The first and **second** fluorophores are joined on the backbone in a configuration that permits the energy transfer from the first fluorophore to the **second** fluorophore. The backbone connector is selected so as not to bind to the target **nucleic** acid sequence under **nucleic** acid **amplification** conditions. Preferably, the backbone connector is a polynucleotide. Another aspect of the invention is to provide passive internal reference molecule containing reagent compositions for use in **nucleic** acid **amplification** reactions. The compositions comprise the internal **amplification** reference molecule of the invention and a **nucleic** acid **amplification** reaction buffer. The reagent compositions, optionally, include additional components required for **nucleic** acid **amplification** reactions. The invention also provides improved methods of measuring the amount of **amplification** product in **nucleic** acid **amplification** reactions employing fluorescer-quencher probe assays, including methods for the real-time measurement of **amplification** product formation. The methods comprise the step of adding the internal reference molecule of the invention to the **amplification** reaction mixture. Fluorescence of the **second** fluorophore on the internal reference may then be measured and used to calculate changes in fluorescence of the fluorophore on a fluorescer-quencher probe.

65. 5,728,525, Mar. 17, 1998, Fluorescent universal **nucleic** acid end label; Michael J. Conrad, 435/6, 91.1; 536/23.1, 24.3, 24.33, 25.3 [IMAGE AVAILABLE]

US PAT NO. 5,728,525 [IMAGE AVAILABLE] L10: 65 of 85

ABSTRACT:
Structural analogs of the six non-fluorescent N-nucleosides commonly found in **RNA** and **DNA**, which are inherently fluorescent under physiological conditions, are identified and methods for their preparation provided. Such analogs may be incorporated into **DNA** and/or **RNA** oligonucleotides via either enzymatic or chemical synthesis to produce fluorescent oligonucleotides having prescribed sequences. Such analogous sequences may be identical to, or the analogous complement of, template or target **DNA** or **RNA** sequences to which the fluorescent oligonucleotides can be hybridized. Methods of preparing either **RNA** or **DNA** oligonucleotide probes of the invention, intermediates used in such methods, and methods of using the probes of the invention in oligonucleotide **amplification**, detection, identification, and/or hybridization assays are also provided.

66. 5,726,026, Mar. 10, 1998, Mesoscale sample preparation device and systems for determination and processing of analytes; Peter Wilding, et al., 435/7.21; 422/50, 55, 58, 68.1; 435/91.1, 91.2, 810; 436/527, 538, 807 [IMAGE AVAILABLE]

US PAT NO: 5,726,026 [IMAGE AVAILABLE] L10: 66 of 85

ABSTRACT:
A mesoscale sample preparation device capable of providing microvolume test samples, separated into a cell-enriched fraction and a fraction of reduced cell content, for performing various analyses, such as binding assays, determinations involving polynucleotide **amplification** and the like. Analytical systems including such devices are also disclosed.

67. 5,720,923, Feb. 24, 1998, **Nucleic** acid **amplification** reaction apparatus; Lawrence A. Haff, et al., 422/68.1, 50, 62, 63, 67, 69, 81, 82.05, 82.08, 82.09, 129, 131, 132, 134, 138, 149, 159, 187, 188, 189, 196, 197, 198, 209, 236; 435/6, 91.1, 91.2, 91.5, 283.1, 285.1, 285.2, 287.1, 287.2, 287.3, 289.1, 290.1; 436/501 [IMAGE AVAILABLE]

US PAT NO: 5,720,923 [IMAGE AVAILABLE] L10: 67 of 85

ABSTRACT:
Apparatus and method for performing a **nucleic** acid **amplification** reaction and preferably a **polymerase** chain reaction (**PCR**) in a reaction mixture in at least one **capillary** tube. Several different embodiments are disclosed. One embodiment cycles a sample through a **capillary** tube loop passing through two thermostatted fluid baths. Another embodiment has the **capillary** tube routed alternatingly

between two heat exchangers to that the sample makes only one pass through the tube. Other embodiments maintain the heat exchangers stationary and translate the samples between them. Still further embodiments maintain the samples stationary and either automatically translate or rotate the heat exchangers past the samples contained within the **capillary** tubes to perform the thermal cycles necessary for the **amplification** reaction.

68. 5,652,099, Jul. 29, 1997, Probes comprising fluorescent nucleosides and uses thereof; Michael J. Conrad, 435/6; 536/24.3, 24.31, 24.32, 24.33, 26.23, 26.6, 26.7, 27.13, 27.6, 28.2, 28.5 [IMAGE AVAILABLE]

US PAT NO: 5,652,099 [IMAGE AVAILABLE] L10: 68 of 85

ABSTRACT:
Structural analogs of the six non-fluorescent N-nucleosides commonly found in **RNA** and **DNA**, which are inherently fluorescent under physiological conditions, are identified and methods for their preparation provided. Such analogs may be incorporated into **DNA** and/or **RNA** oligonucleotides via either enzymatic or chemical synthesis to produce fluorescent oligonucleotides having prescribed sequences. Such analogous sequences may be identical to, or the analogous complement of, template or target **DNA** or **RNA** sequences to which the fluorescent oligonucleotides can be hybridized. Methods of preparing either **RNA** or **DNA** oligonucleotide probes of the invention, intermediates used in such methods, and methods of using the probes of the invention in oligonucleotide amplication, detection, identification, and/or hybridization assays are also provided.

69. 5,650,274, Jul. 22, 1997, **DNA** analyzing method; Hideki Kambara, et al., 435/6; 204/456, 461; 435/5, 91.1, 91.2; 536/24.3, 24.32, 24.33 [IMAGE AVAILABLE]

US PAT NO: 5,650,274 [IMAGE AVAILABLE] L10: 69 of 85

ABSTRACT:
A **DNA** analyzing method comprising ligating the oligomer of a known base sequence to the **DNA** fragment obtained by digesting a sample with a restriction enzyme, hybridizing an oligomer and **DNA** fragment using oligomers which have the sequences of all combinations of the types of the bases within the length of several bases following the known base sequence, checking the presence or absence of hybridization or complementary **DNA** strand extension, identifying the **DNA** fragment terminal sequence from this result, and fractionating the **DNA** fragments and analyzing them. This **DNA** analyzing method provides an

effective analysis of mixtures of long DNAs or **DNA** fragments.

70. 5,645,801, Jul. 8, 1997, Device and method for **amplifying** and detecting target **nucleic** acids; Stanley R. Bouma, et al., 422/68.1, 50, 52, 55, 57, 58, 61, 63, 69; 435/6, 91.1, 91.2, 283.1, 287.1, 287.2, 287.3, 288.1, 288.2, 288.7, 289.1, 290.1, 290.4, 293.1, 304.1, 810; 536/23.1, 24.1, 24.3, 24.31, 24.32, 24.33 [IMAGE AVAILABLE]

US PAT NO: 5,645,801 [IMAGE AVAILABLE] L10: 70 of 85

ABSTRACT:
Methods, devices, apparatus and kits for **amplifying** and detecting **nucleic** acid are provided. The apparatus is a thermal cycling device that operates in conjunction with a reaction/detection unit. A sample is loaded into a reaction chamber of the device which is then sealably mated with a detection chamber to form a sealed reaction/detection unit that is virtually irreversibly closed. One or more heating elements of the thermal cycling apparatus applies a desired temperature to the reaction/detection device to **amplify** target **nucleic** acid in the sample. The reaction mixture is then transferred to the detection chamber and **amplified** target **nucleic** acid is immobilized on a support in the detection chamber. A detection system associated with the apparatus detects and analyzes the immobilized **amplified** **nucleic** acid target. Kits include the reaction/detection units and reagents for **amplification**.

71. 5,635,348, Jun. 3, 1997, Method and probes for identifying bacteria found in blood; Diane U. Leong, 435/6; 536/23.1, 24.32 [IMAGE AVAILABLE]

US PAT NO: 5,635,348 [IMAGE AVAILABLE] L10: 71 of 85

ABSTRACT
Methods and reagents are provided for detecting polynucleotide sequences in bacteria using probes specific for gram-negative and gram-positive bacteria and other specific bacterial species or groups of species respectively. Also provided are methods of **amplification** using primers specific for bacterial species.

72. 5,620,847, Apr. 15, 1997, Methods and reagents for detection of bacteria in cerebrospinal fluid; Kay S. Greisen, et al., 435/6, 91.2; 536/24.3, 24.32 [IMAGE AVAILABLE]

US PAT NO: 5,620,847 [IMAGE AVAILABLE] L10: 72 of 85

ABSTRACT:

Methods and reagents are provided for detecting bacterial **nucleic** acids in cerebrospinal fluid. In a preferred embodiment, a panel of probes is provided for detecting and identifying causal agents of meningitis.

73. 5,602,756, Feb. 11, 1997, Thermal cycler for automatic performance of the **polymerase** chain reaction with close temperature control; John G. Atwood, et al., 364/528.04; 165/205; 364/528.35; 702/130 [IMAGE AVAILABLE]

US PAT NO: 5,602,756 [IMAGE AVAILABLE] L10: 73 of 85

ABSTRACT:
An instrument for performing highly accurate **PCR** employing a sample block in microtiter tray format. The sample block has local balance and local symmetry. A three zone film heater controlled by a computer and ramp cooling solenoid valves also controlled by the computer for gating coolant flow through the block controls the block temperature. Constant bias cooling is used for small changes. Sample temperature is calculated instead of measured. A platen deforms plastic caps to apply a minimum acceptable threshold force for seating the tubes and thermally isolates them. A cover isolates the block. The control software includes diagnostics. An install program tests and characterizes the instrument. A new user interface is used. Disposable, multipiece plastic microtiter trays to give individual freedom to sample tubes are taught.

74. 5,585,242, Dec. 17, 1996, Method for detection of **nucleic** acid using total internal reflectance; Stanley R. Bouma, et al., 435/6, 91.2 [IMAGE AVAILABLE]

US PAT NO: 5,585,242 [IMAGE AVAILABLE] L10: 74 of 85

ABSTRACT:
An apparatus and method for detecting **amplified** target **nucleic** acid is provided wherein the presence and concentration of **amplified** target is determined by total internal reflection over the course of the **amplification** reaction. A method and apparatus for detecting target **nucleic** acid is also provided wherein the presence and concentration of target is determined by total internal reflection and coupling of the target to the TIR element by scissile linkage. An improved immunoassay using total internal reflection and differential temperature cycling is further provided.

75. 5,541,067, Jul. 30, 1996, Method and system for genotyping; Mark W.

Perlin, 435/6; 204/461, 466, 612, 616; 382/128, 129, 140; 435/91.2; 536/24.31, 24.33 [IMAGE AVAILABLE]

US PAT NO: 5,541,067 [IMAGE AVAILABLE] L10: 75 of 85

ABSTRACT:
The present invention pertains to a process which can be fully automated for accurately determining the alleles of STR **genetic** markers. More specifically, the present invention is related to performing **PCR** **amplification** on locations of **DNA**, labelling the **PCR** products, converting the labels into a signal, removing a reproducible **PCR** stutter pattern from the signal by means of a computational device, and then determining the genotype of the location of the **DNA**. An **amplification** can include multiple locations from the **DNA** of one or more individuals. The invention also pertains to genetics applications and systems which can effectively use this genotyping information.

76. H 1,531, May 7, 1996, Thermophilic **DNA** **polymerase**; Ilse I. Blumentals, et al., 435/194 [IMAGE AVAILABLE]

US PAT NO: H 1,531 [IMAGE AVAILABLE] L10: 76 of 85

ABSTRACT:
The invention relates to a substantially pure **thermostable** **DNA** **polymerase**. Preferably, the **DNA** **polymerase** has a molecular weight of about 95 kilodaltons and is more **thermostable** than Taq **DNA** **polymerase**. The present invention also relates to cloning and expression of the **DNA** **polymerase** in E. coli, to **DNA** molecules containing the cloned gene, and to host cells which express said genes.

77. 5,512,441, Apr. 30, 1996, Quantative method for early detection of mutant alleles and diagnostic kits for carrying out the method; Zeey A. Ronai, 435/6, 18, 91.1, 91.2, 91.52; 536/24.33 [IMAGE AVAILABLE]

US PAT NO: 5,512,441 [IMAGE AVAILABLE] L10: 77 of 85

ABSTRACT:
There is disclosed a quantitative sensitive method to enable the detection of point mutations at a known site to a diagnostic kit which uses a multi step (for example, four steps) or a single step reaction. The method uses selective **polymerase** chain reaction (**PCR**) **amplification** of mutant test gene sequences involving first stage **amplification** of both mutant and wild-type sequences, first stage restriction enzyme digestion of only wild-type sequences, **second**

stage **amplification** of undigested **amplified** fragments enriched in mutant sequences and **second** stage digestion of previously undigested wild-type sequences. Long and short tail primers are used in the first and **second** stages of **amplification** respectively to enable selective **amplification** (in the **second** stage) of only previously **amplified** material and none of the original test genomic **DNA**. The short tail primers are labelled with biotin and fluorescence at their respective 5' and 3' ends to enable easy detection and quantitation of mutations in the test gene via automated fluorescence readers. The use of multi steps as well as a single step reaction is disclosed. The process is exemplified with respect to its use in detecting mutations in the human K-ras gene, yet it is applicable for any given mutation in a defined site.

78. 5,487,972, Jan. 30, 1996, **Nucleic** acid detection by the 5'-3'exonuclease activity of polymerases acting on adjacently hybridized oligonucleotides; David H. Gelfand, et al., 435/6, 91.2, 810; 436/501; 536/22.1, 23.1, 24.1, 24.3, 24.31, 24.32, 24.33 [IMAGE AVAILABLE]

US PAT NO: 5,487,972 [IMAGE AVAILABLE] L10: 78 of 85

ABSTRACT:
A process of detecting a target **nucleic** acid using labeled oligonucleotides which uses the 5' to 3' nuclease activity of a **nucleic** acid **polymerase** to cleave annealed labeled oligonucleotide from hybridized duplexes and thus releasing labeled oligonucleotide fragments for detection. This process is easily incorporated into a **PCR** **amplification** assay.

79. 5,475,610, Dec. 12, 1995, Thermal cycler for automatic performance of the **polymerase** chain reaction with close temperature control; John G. Atwood, et al., 364/528.04; 422/943 [IMAGE AVAILABLE]

US PAT NO: 5,475,610 [IMAGE AVAILABLE] L10: 79 of 85

ABSTRACT:
An instrument for performing highly accurate **PCR** employing a sample block in microtiter tray format. The sample block has local balance and local symmetry. A three zone film heater controlled by a computer and ramp cooling solenoid valves also controlled by the computer for gating coolant flow through the block controls the block temperature. Constant bias cooling is used for small changes. Sample temperature is calculated instead of measured. A platen deforms plastic caps to apply a minimum acceptable threshold force for seating the tubes and thermally isolates them. A cover isolates the block. The control software includes

diagnostics. An install program tests and characterizes the instrument. A new user interface is used. Disposable, multipiece plastic microtiter trays to give individual freedom to sample tubes are taught.

80. 5,462,854, Oct. 31, 1995, Inverse linkage oligonucleotides for chemical and enzymatic processes; Peter J. Coassin, et al., 435/6, 91.2; 536/23.1 [IMAGE AVAILABLE]

US PAT NO: 5,462,854 [IMAGE AVAILABLE] L10: 80 of 85

ABSTRACT:
Inverse Linkage Oligonucleotides ("ILO") useful in enzymatic process are disclosed. Particularly preferred ILOs are amenable to enzymatic elongation from either, or most preferably, both termini. In a particularly preferred embodiment, each terminus of an ILO has an enzymatically functional 3' group. Accordingly, under appropriate conditions and in the presence of, e.g., dNTPs, enzyme, sample **DNA**, and ILO comprising a first region complementary to a first region of the sample **DNA** and a **second** region complementary to a **second**, different region of the sample **DNA**, exponential **amplification** of the sample **DNA** can be effectuated.

81. 5,455,170, Oct. 3, 1995, Mutated **thermostable** **nucleic** acid **polymerase** enzyme from Thermus species Z05; Richard D. Abramson, et al., 435/252.3, 194, 252.33, 320.1; 536/23.2 [IMAGE AVAILABLE]

US PAT NO: 5,455,170 [IMAGE AVAILABLE] L10: 81 of 85

ABSTRACT:
A purified **thermostable** enzyme is derived from the eubacterium Thermus species Z05. The enzyme has **DNA** **polymerase**, activity reverse transcriptase activity, and optionally 5'.fwdarw.3' exonuclease activity. The enzyme can be native or recombinant, and may be used with primers and nucleoside triphosphates in a temperature-cycling chain reaction where at least one **nucleic** acid sequence is **amplified** in quantity from an existing sequence.

82. 5,405,774, Apr. 11, 1995, **DNA** encoding a mutated **thermostable** **nucleic** acid **polymerase** enzyme from thermus species sps17; Richard D. Abramson, et al., 435/252.3, 194, 252.8, 320.1; 536/23.2 [IMAGE AVAILABLE]

US PAT NO: 5,405,774 [IMAGE AVAILABLE] L10: 82 of 85

ABSTRACT:

A purified **thermostable** enzyme is derived from the bacterium Thermus species sps17. The enzyme has **DNA** **polymerase** activity, reverse transcriptase activity, and optionally, 5'.fwdarw.3' exonuclease activity. The enzyme can be native or recombinant, and can be used with selected primers and nucleoside triphosphates in a temperature-cycling chain reaction where at least one **nucleic** acid sequence is **amplified** in quantity from an existing sequence.

83. 5,403,711, Apr. 4, 1995, **Nucleic** acid hybridization and **amplification** method for detection of specific sequences in which a complementary labeled **nucleic** acid probe is cleaved; Joseph A. Walder, et al., 435/6, 91.2; 536/24.3 [IMAGE AVAILABLE]

US PAT NO: 5,403,711 [IMAGE AVAILABLE] L10: 83 of 85

ABSTRACT:
A method of detection of **nucleic** acid (**DNA** or **RNA**) target sequence in which such a sequence serves as a cofactor for a catalytic reaction in which a complementary, labeled **nucleic** acid probe is cleaved such that the target sequence is released intact and can repeatedly recycle through the reaction pathway, thereby providing signal **amplification**.

84. 5,350,672, Sep. 27, 1994, Specific **DNA** primers and method to use same detect Eperythrozoon suis; Richard D. Oberst, et al., 435/6, 252.1; 536/24.3, 24.32 [IMAGE AVAILABLE]

US PAT NO: 5,350,672 [IMAGE AVAILABLE] L10: 84 of 85

ABSTRACT:
The use of E. suis specific primers in **PCR** with **DNA** from swine blood increases the sensitivity of current **DNA** hybridization protocols for determining whether swine are infected with E. suis prior to the development of any clinical symptoms. The present invention provides these E. suis primers and a method to use these primers in a **PCR** protocol to provide a highly sensitive diagnostic assay for early signs of an E. suis infection.

85. 5,210,015, May 11, 1993, Homogeneous assay system using the nuclease activity of a **nucleic** acid **polymerase**; David H. Gelfand, et al., 435/6, 18, 91.2, 196, 805; 436/63, 501, 815; 536/24.3 [IMAGE AVAILABLE]

US PAT NO: 5,210,015 [IMAGE AVAILABLE] L10: 85 of 85

ABSTRACT:

The present invention is directed to a process of detecting a target **nucleic** acid using labeled oligonucleotides. This process uses the 5' to 3' nuclease activity of a **nucleic** acid **polymerase** to cleave annealed labeled oligonucleotide from hybridized duplexes and release labeled oligonucleotide fragments for detection. This process is easily incorporated into a **PCR** **amplification** assay.

(FILE 'USPAT' ENTERED AT 15:38:48 ON 14 AUG 1999)
L1 13401 S PCR OR (AMPLIF? AND POLYMERASE)
L2 411543 S SECONDS OR MINUTE
L3 303142 S SECOND AND L2
L4 6037 S L3 AND L1
L5 5593 S (DNA OR RNA OR NUCLEIC OR GENETIC) AND L4
L6 5593 S (FAST OR RAPID OR RAPIDLY OR SECONDS OR MINUTE) AND L5
L7 78243 S AMPLIF?/CLM OR POLYMERASE/CLM OR PRIMER/CLM OR PRIMERS/C
LM
L8 1134 S L6 AND L7
L9 411 S L8 AND THERMOSTABLE
L10 85 S CAPILLARY AND L9